



International Workshop on “Digital Epidemiology”



epidemic
marketplace

An Information Platform for Epidemiological Data

May 30–31, 2013

Mário J. Silva

mjs@inesc-id.pt

dogbyter

Filters

About 253,000 results

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André Simões

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The Big Bang Theory Season 4 Bloopers

by 7lifeisbeautiful • 1 year ago • 19,525,758 views

Bloopers from the Big Bang Theory Season 4 DVD. No copyright infringement intended, footage belongs to Warner Brothers. Also ...

Big Bang Theory Season 5 Bloopers [HD]

by 14crazyrock14 • 8 months ago • 2,904,216 views

Big Bang Theory Season 5 Gag Reel/Bloopers Bloopers from the Big Bang Theory Season 5 DVD. No copyright infringement ...

The Big Bang Theory: Season 1 Bloopers [HD] [CC]

by Mintiesjz • 8 months ago • 584,304 views

Bloopers from The Big Bang Theory Season 1 Blu-Ray.



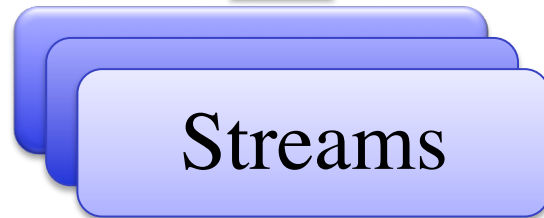
epidemic marketplace “Objects”



Flu in Portugal



Influenzanet data 2012



December

HEY, HOLD ON!!!:

I HAVE DROPBOX FOR THAT...

dogbyter

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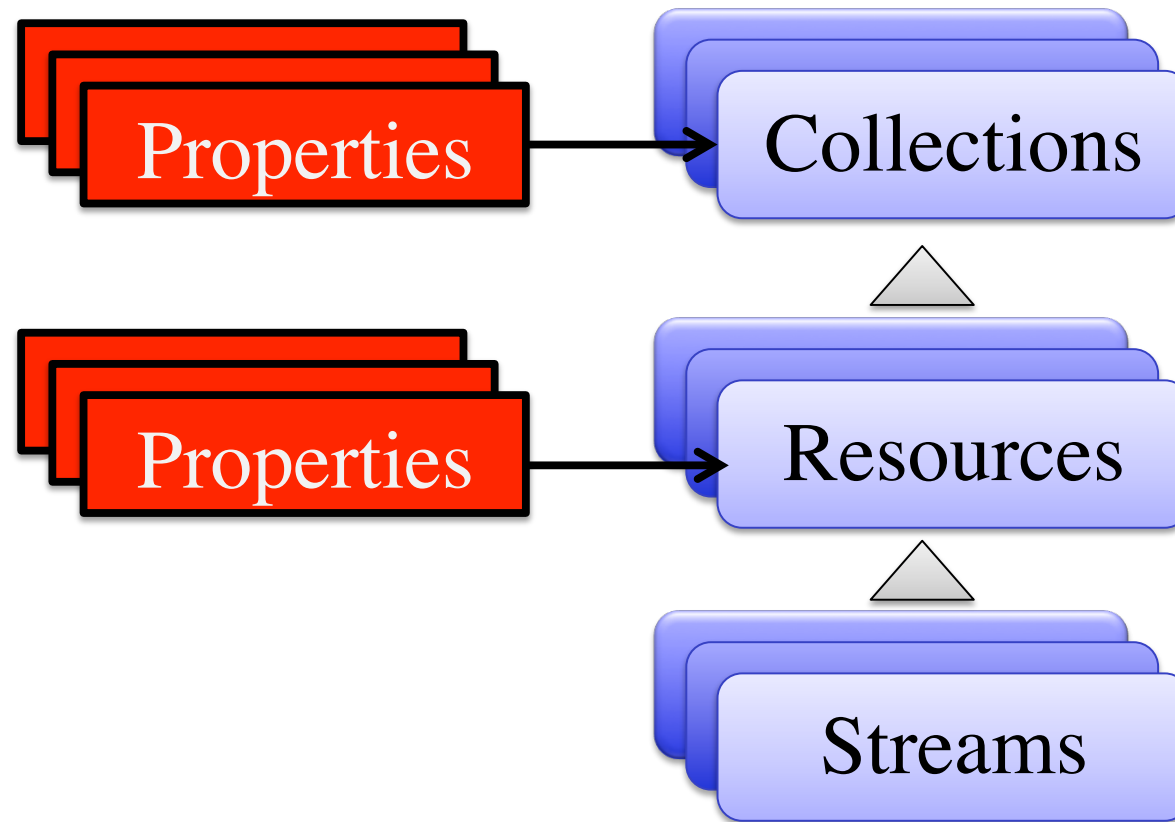
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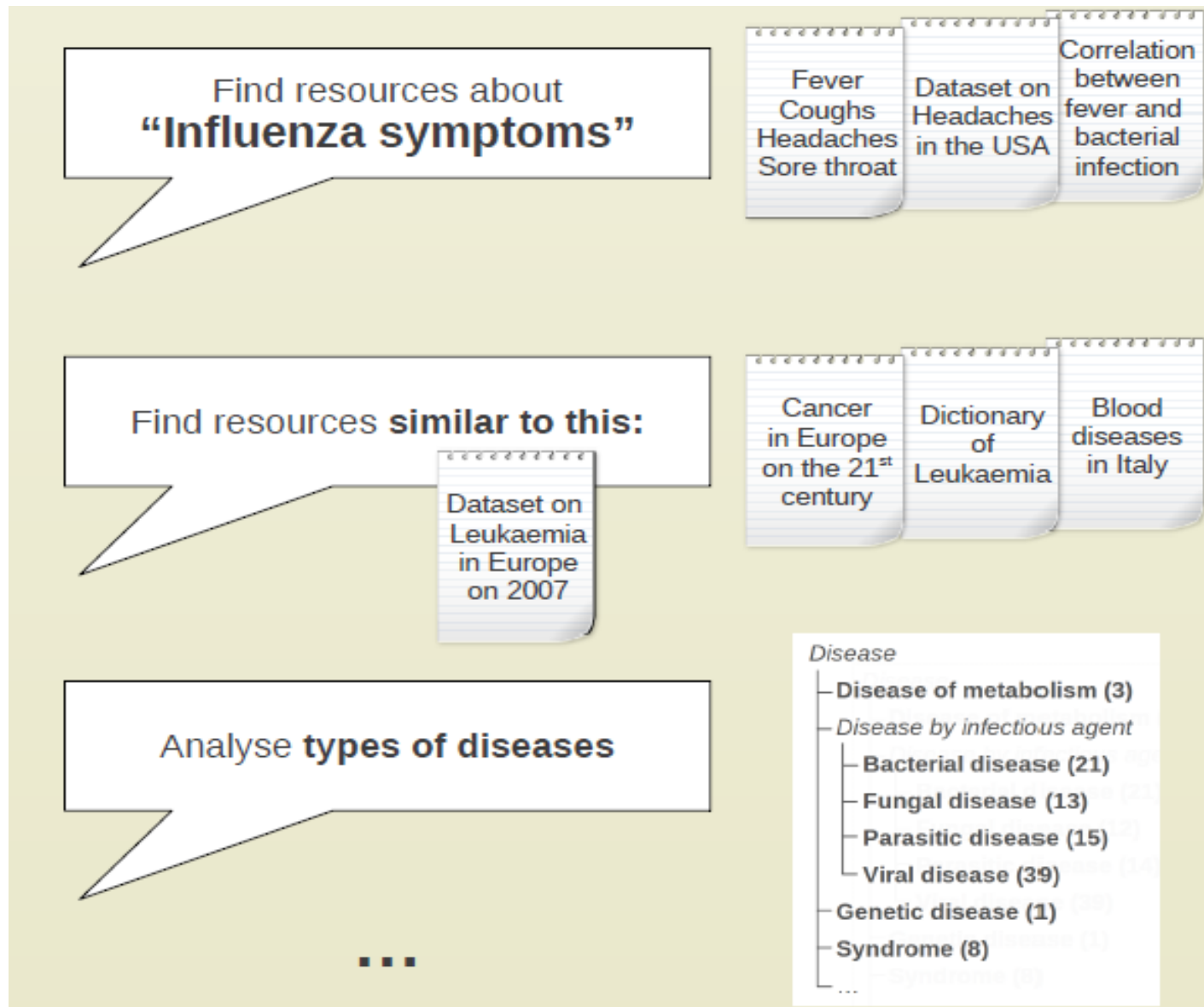
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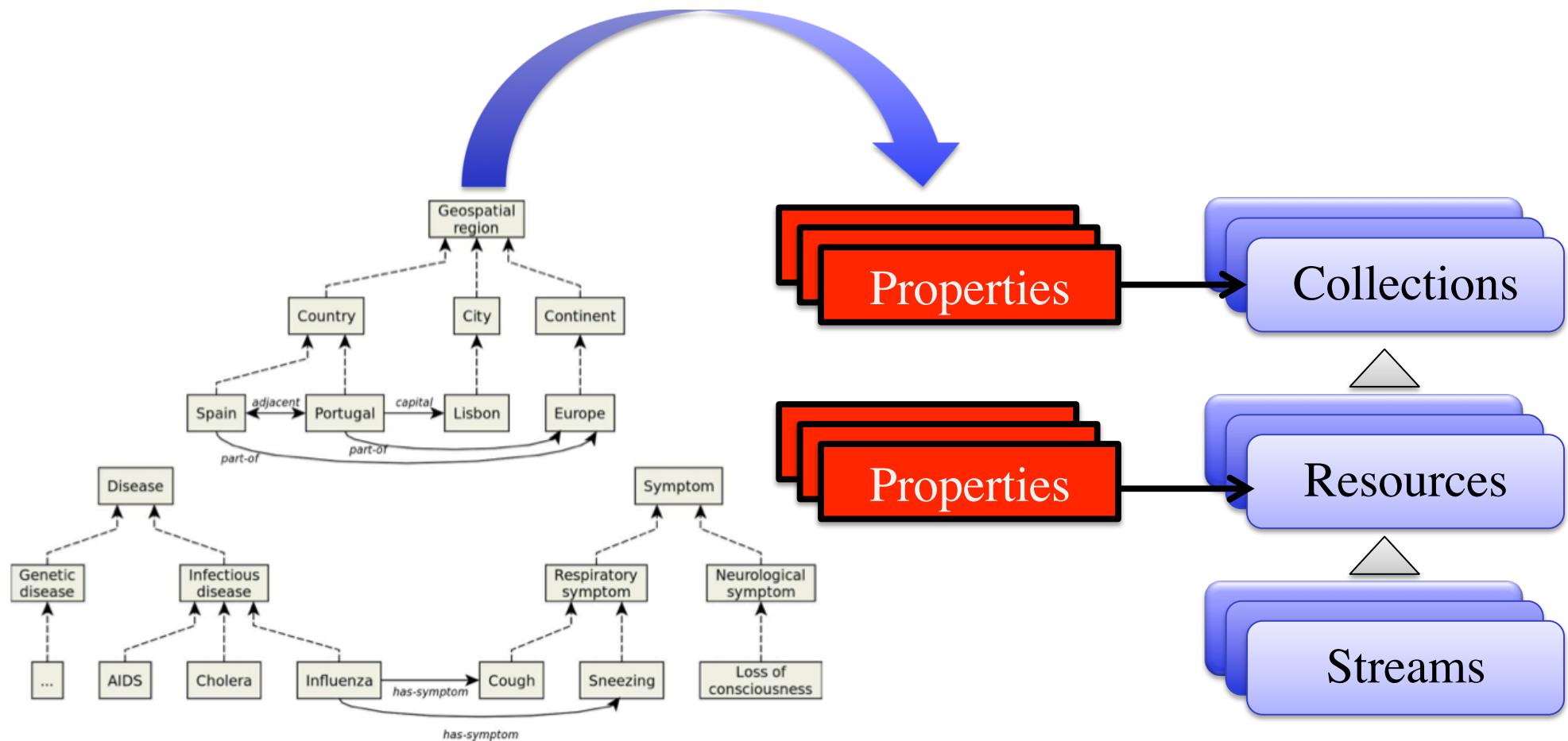
Bloopers from The Big Bang Theory Season 1 Blu-Ray.

Annotations



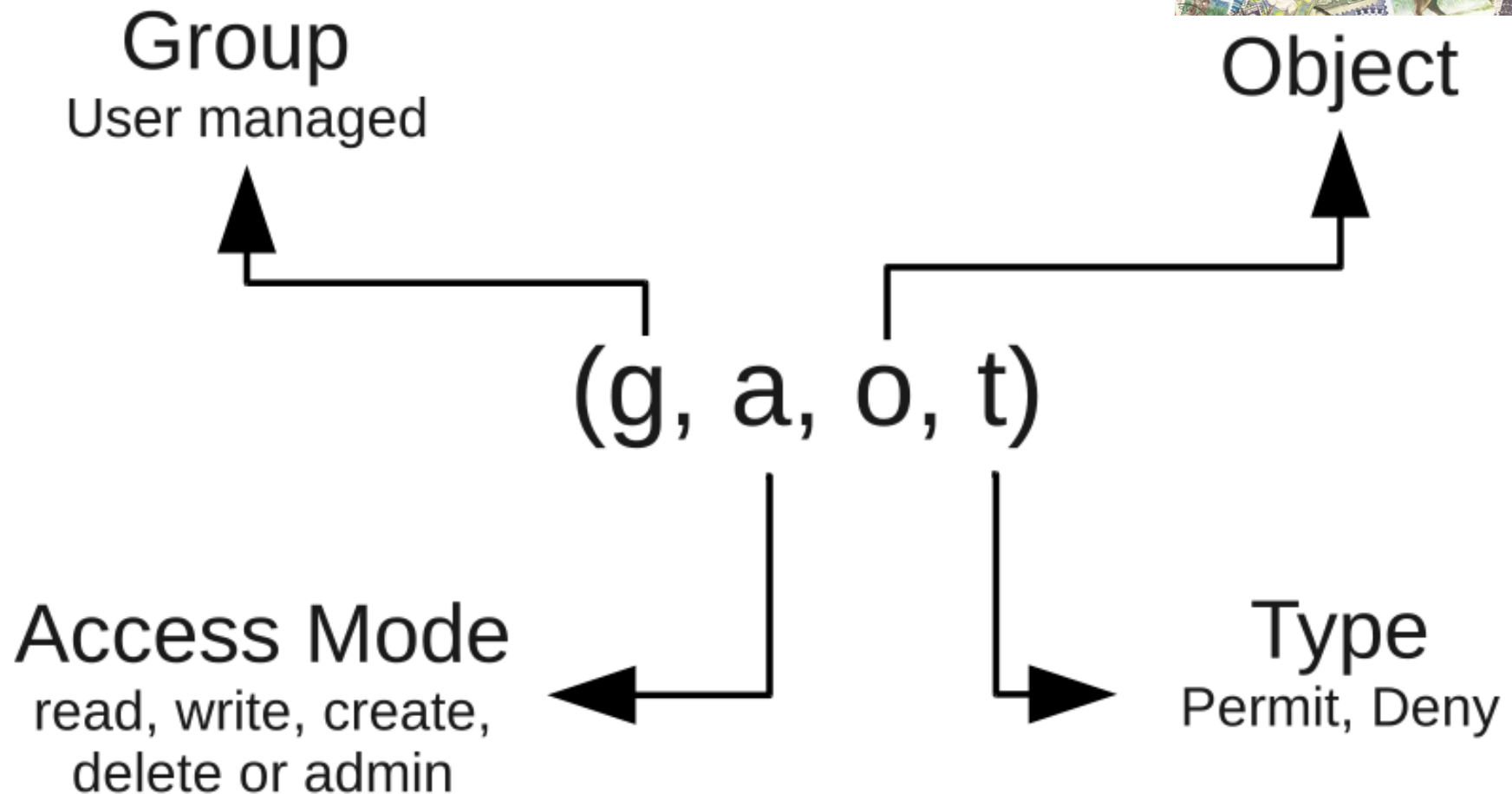


Machine-understandable vocabularies





Access Control Model



Besides, there are already so many sites for collecting and monitoring...

**THIS IS FOR THOSE WHO ARE
AT THE BOTTOM OF THINGS!**



epidemic marketplace

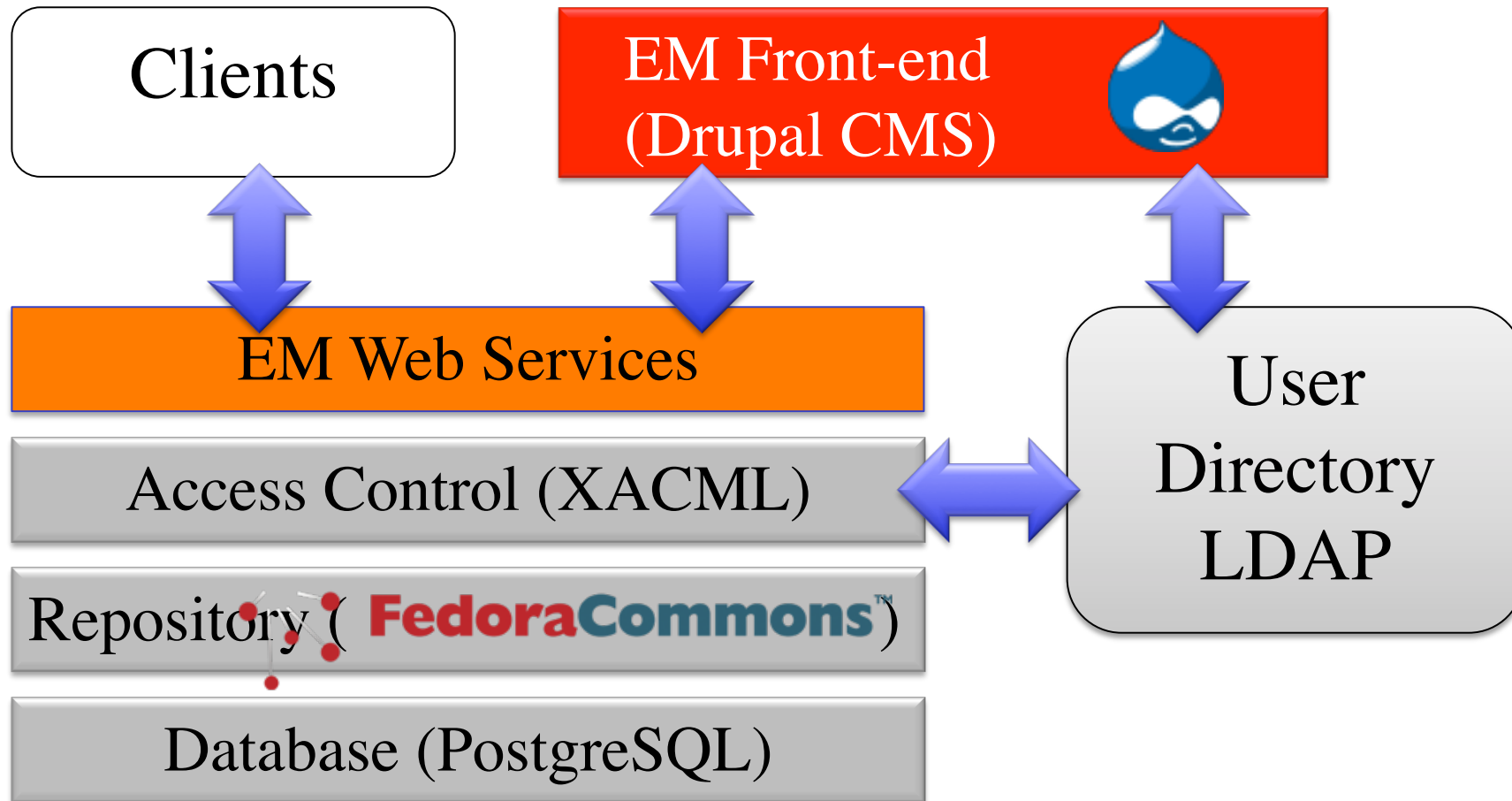
Front-end

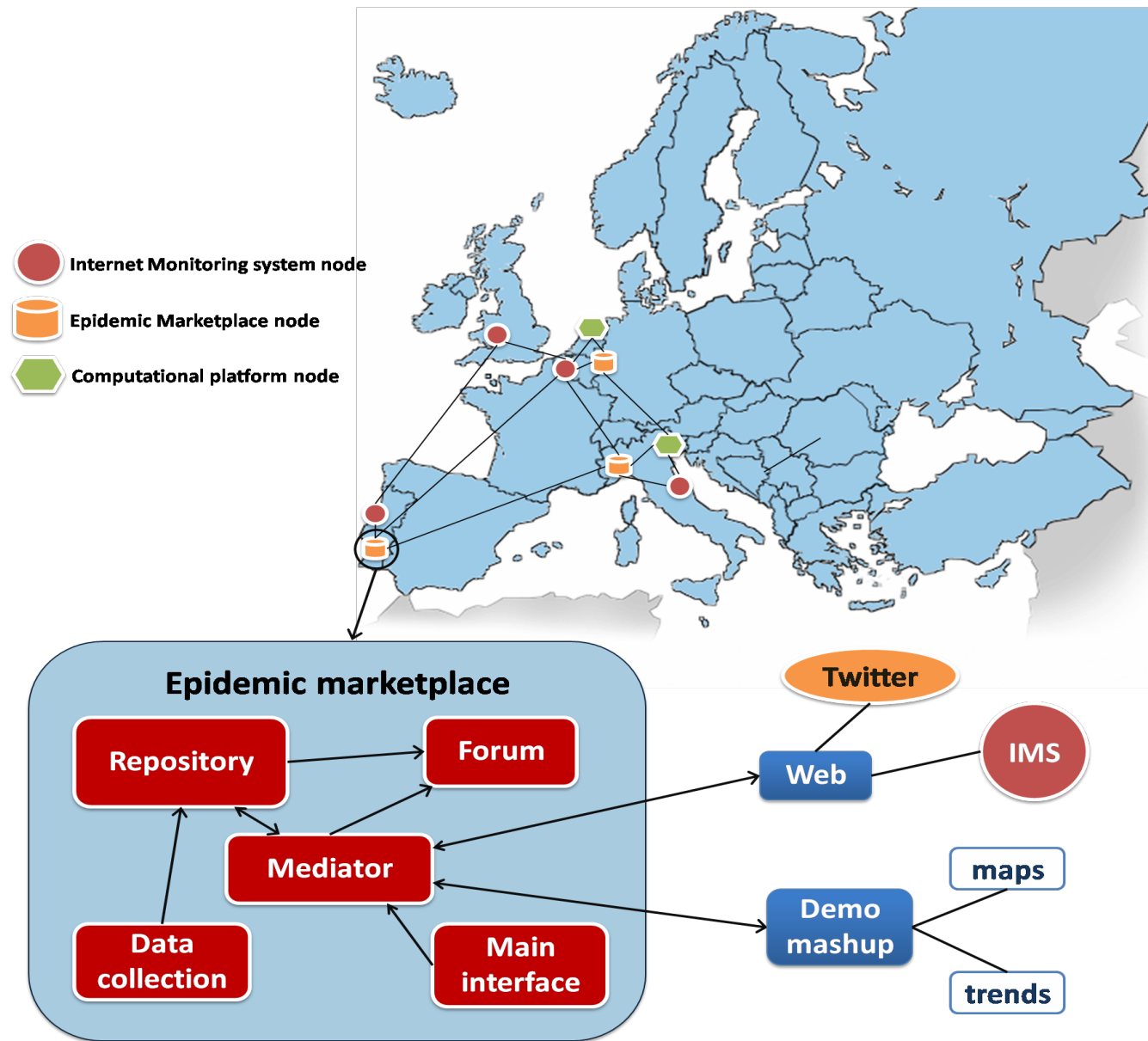
Clients

Web Services API

Repository

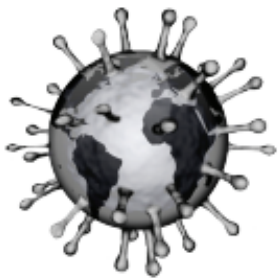
Open SW stack





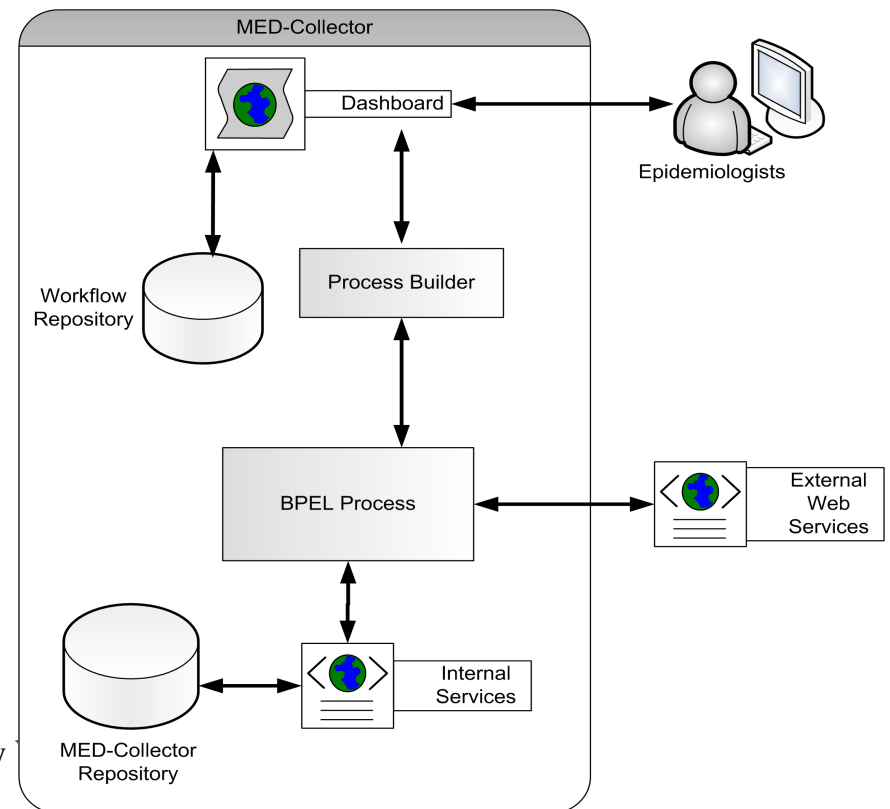


epidemic marketplace **Clients**

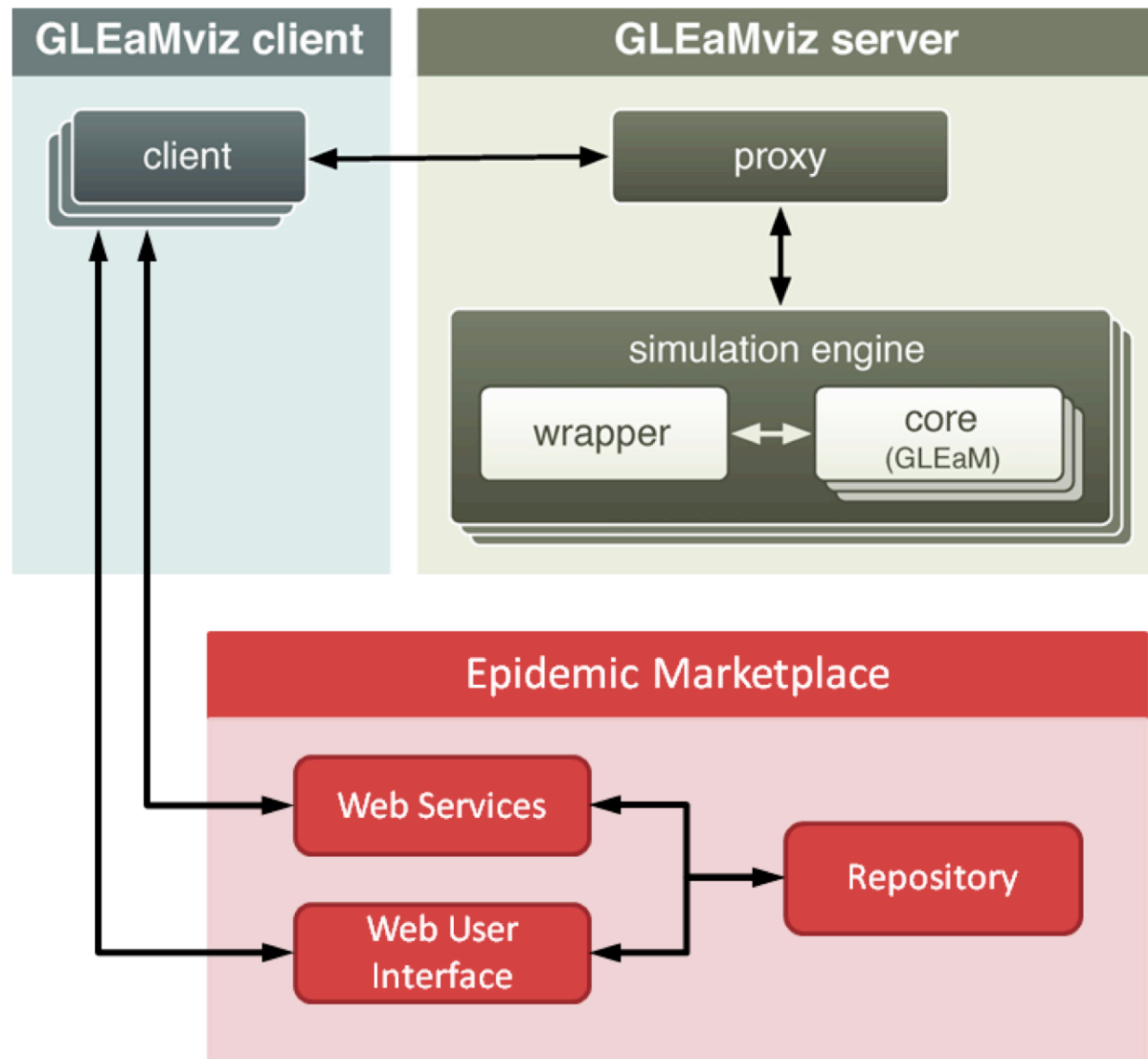


GLEaMviz Simulator
GLEaMviz.org

MedCollector



31 May 2013 - Digital Epimediology



Influenzanet Integration



Filter by

Disease

Influenza (11)

Country

Belgium (3)

Italy (3)

Netherlands (3)

Portugal (3)

Spain (1)

France (1)

United Kingdom (1)

Sweden (1)

UK (1)

Search

Examples: Epidemic, flu, h1n1

Search

Advanced ►

Order by: Title Uploader Date

11 results found



Epidemiological
data

Influenzanet Estimated Incidences for UK in 2012

by João Miguel Quintino de Morais Zamite on 2013-01-30

Influenzanet is a system to monitor the activity of influenza-like-illness (ILI) with the aid of volunteers via the internet. These are the results of this survey for the country UK and the period 2012.

Epidemiology



Organisation

Influenzanet

by Luis Filipe Lopes on 2010-02-09

Epidemiology



Resource:

Edit "Infections, medication use, and the prevalence of symptoms of asthma, rhinitis, and eczema in childhood.":

The Pre-load feature is based on [BioPortal Annotator](#) tool and NERO ontologies.

Note: you will have to submit changes after the pre-loading.

Biological Information

Diagnostic Method

Diagnostic test used to obtain data in the resource; or the protocol defined in the resource

Disease

Disease that is mentioned in the contents of the resource

Symptom

Symptom that is mentioned in the contents of the resource

Drug

Chemical compounds associated with in the resource, as cause and/or treatment of a disease

Other available actions

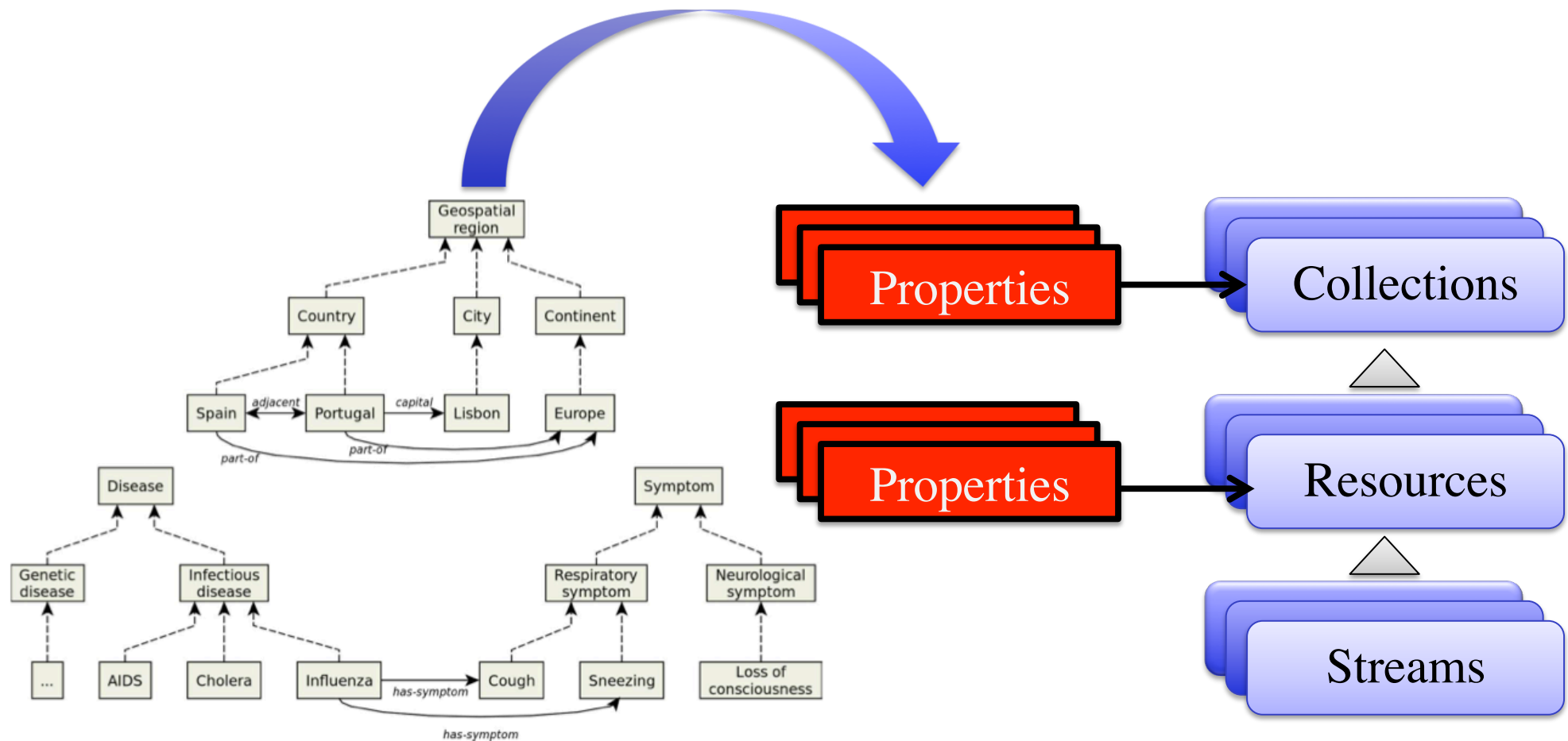
Set a relationship with
this resource



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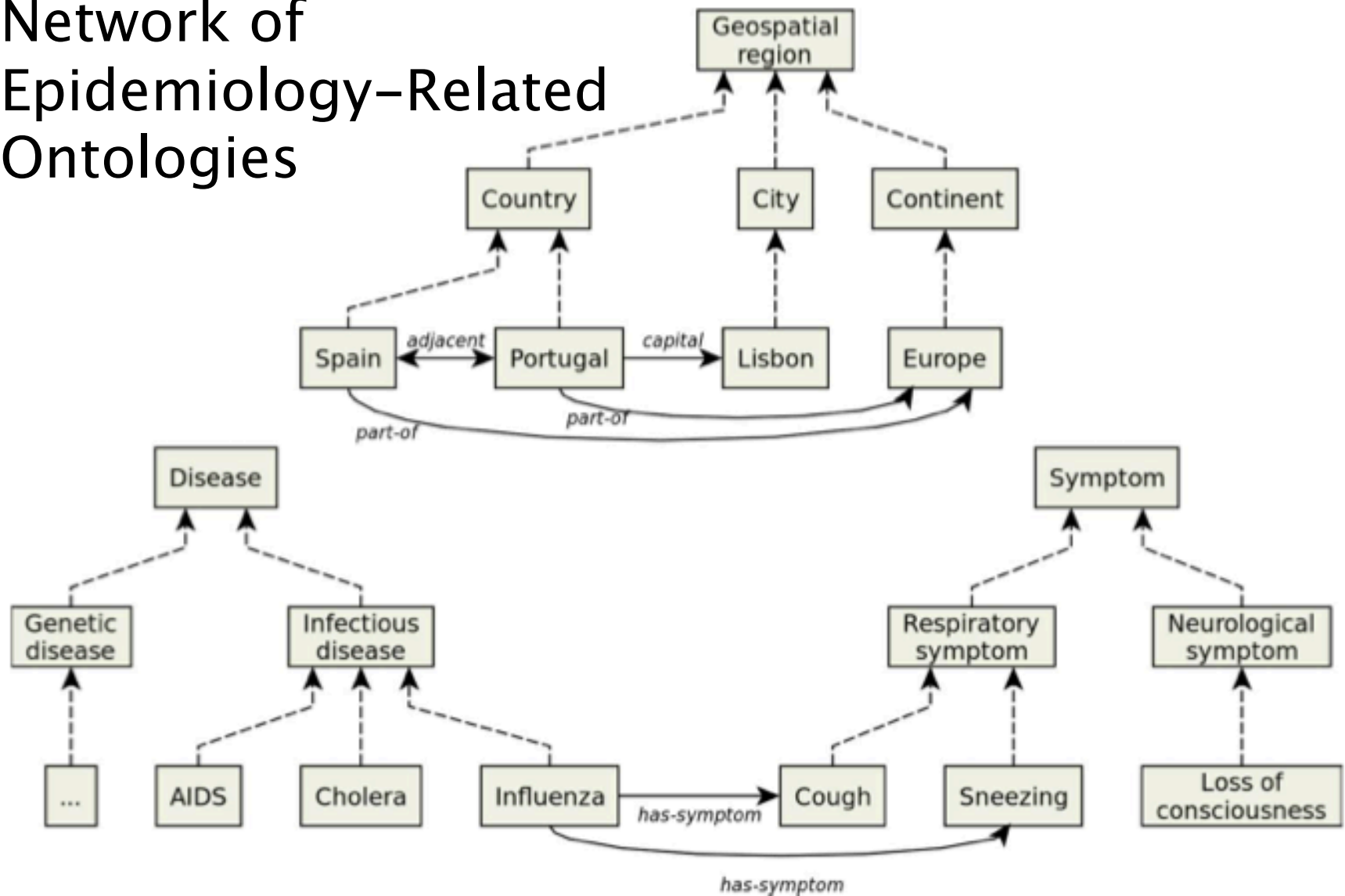
ONTOLOGIES IN THE EM

Which Ontology Terms?

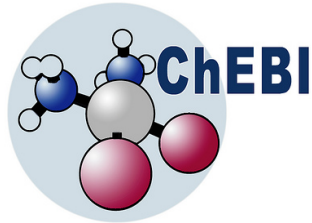


NERO

Network of Epidemiology-Related Ontologies



Selected Ontologies



The Open Biological and Biomedical Ontologies

MeSH used to index articles in biomedical sciences (**general domain**)

GeoPlanet™ representation of the world **geography**

ENVO ontology for the **environment** domain

TRANS describes **transmission** of a pathogen from one host to another host

ChEBI ontology of **chemical compounds** focussed on biologically relevant entities



Upload resource	
Title:	Influenza in France
Description:	Contains data collected by an organisation
Disease:	Influenza
Host:	Human
Transmission:	Airborne
Environment:	Temperature, Humidity
Location:	France
Demography:	School years
...	

Epidemiology-
related ontologies

“Foreign” epidemic
resources

feedback

NERO

applied on

feedback

applied on



**epidemic
marketplace**

HEY, HOLD ON!!!

**HOW GOOD ARE THESE
ONTOLOGY-BASED
CHARACTERIZATIONS?**

**IS ANYBODY ACTUALLY
SHARING COLLECTED DATA?**

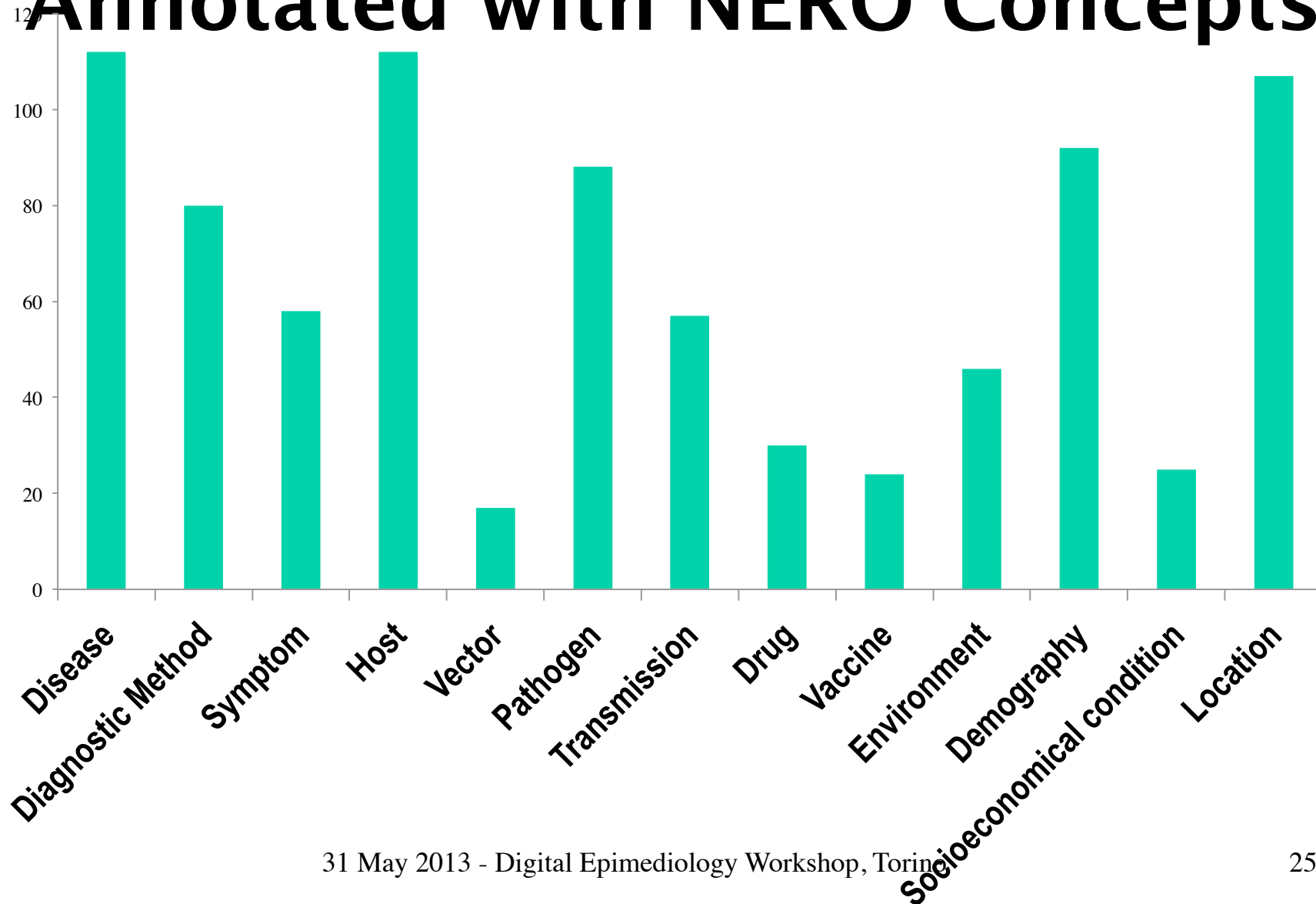


Eurosurveillance + JECH Study

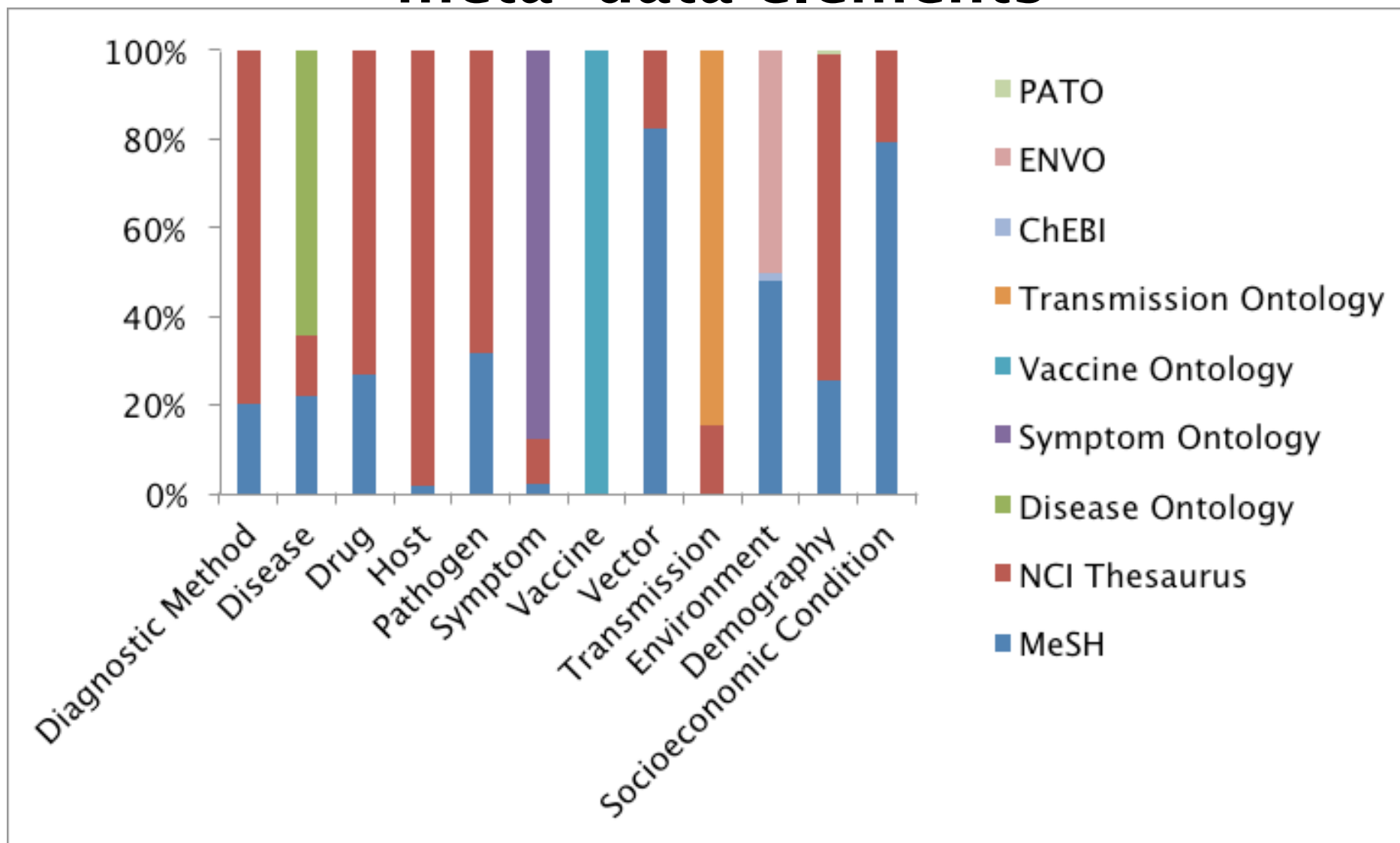
- Eurosurveillance: all (78) papers published between October 13, 2011 and August 16, 2012.
- JECH: 2005 to 2011, 34 papers.
- **112 publications.**
- All datasets and corresponding papers fully characterized in the Epidemic Marketplace

Papers

Annotated with NERO Concepts



Distribution of Ontology Terms in meta-data elements



Eurosurveillance Study: Conclusions

1. 112 datasets and ...
none available from a repository
2. Having the datasets in public repositories, like the EM, would stimulate production of epidemic data as **linked open data** and enable **meta-analyses** in epidemiology
3. Textual descriptions **provide the necessary information** for reasonably complete characterization of datasets with NERO.
4. **Incentive\$** are needed to promote the production of structured metadata characterizing epidemic datasets.



The Epidemiology Ontology (EO)

- **BASED** on the Dictionary of Epidemiology
- Focused on **Transmission**
 - OBO Foundry is welcoming

<https://code.google.com/p/epidemiology-ontology/>

The OWL file:
<http://tinyurl.com/mpyukn7>





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A LITTLE DEMO



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In 2009 there were 14,346 fatal cases of swine flu,
we stored the data

Examples: Epidemic, flu, h1n1

Search

Advanced ►

Latest resources



Mobility data

Seasonal transmission potential and activity peaks of the new influenza A(H1N1): Supporting Data

by Francisco Couto on 2013-05-15

Epidemiology



Event

Workshop on Digital Epidemiology

by Francisco Couto on 2013-05-15

Epidemiology



Epidemiological data

HCoV-EMC infection in Calu-3 cells: Supporting data

by Francisco Couto on 2013-05-15

Epidemiology

Latest requests



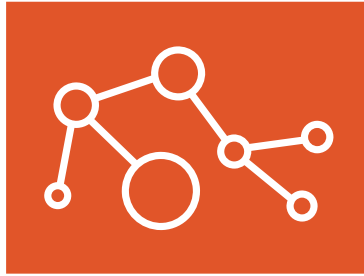
Request for flu inform

Epidemiology

V3.0 Announced HERE
Try it at:
Epimarketplace.net

Testing additional data

Epidemiology



epidemic marketplace team

Mário J. Silva, Dulce Domingos, Francisco Couto,
Fabrício Silva, Cátia Pesquita, Luís Lopes

João Zamite, João Ferreira, Paulo Graça, Hugo
Ferreira, Hugo Santos, Vera Carvalho, Tiago Posse,
Carlos Sousa, Patrícia Sousa, Juliana Duque
Corrado Gioannini, Daniela Paolotti



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marketplace

www.epimarketplace.net

Participate!

Latest resources



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by Francisco Couto on 2013-05-15

Epidemiology



Workshop on Digital Epidemiology

y Francisco Couto on 2013-05-15

Epidemiology



Request for flu information in Brasil

Epidemiology



medcollector datasets

Epidemiology



Data describing the population's infection network structure

Epidemiology

<https://www.facebook.com/EpidemicMarketplace>

EM-Related Publications

- Tiago Grego, Francisco M. Couto 2013: Enhancement of Chemical Entity Identification in Text Using Semantic Similarity Validation. **PLOS ONE** 5(8), e62984.
- João Ferreira, Daniela Paolotti, Francisco Couto, Mário J. Silva 2012: On the usefulness of ontologies in epidemiologic research and practice. **Journal of Epidemiology and Community Health**.
- Catia Pesquita, Francisco M. Couto 2012: Predicting the Extension of Biomedical Ontologies. **PLOS Computational Biology** 9(8), e1002630.
- Zamite, J., Silva, F., Couto, F., Silva, M. 2011: MEDCollector: Multisource epidemic data collector. **Transactions on Large-scale Data-and Knowledge-centered Systems IV: Special Issue on Database Systems for Biomedical Applications** (6990), 40-72.
- Francisco Couto, Mário J. Silva 2011: Disjunctive Shared Information between Ontology Concepts: application to Gene Ontology. **Journal of Biomedical Semantics**.